



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/756,553

01/08/2001

Rafi Shalom

6727/01143

5697

7590

05/10/2004

DARBY & DARBY P.C.

805 Third Avenue

New York, NY 10022

EXAMINER

NG, CHRISTINE Y

ART UNIT

PAPER NUMBER

2663

6

DATE MAILED: 05/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/756,553

Applicant(s)

SHALOM, RAFI

Examiner

Christine Ng

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 16-26 is/are rejected.
- 7) ☒ Claim(s) 13-15 and 27-29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,497,371 to Ellis et al.

Referring to claim 1, Ellis et al discloses in Figure 3 a method for transmitting data over a channel comprising:

Receiving a first datagram (D1) for transmission at a first priority (0). "The first 1-bit field identifies the priority of the packet as high (1) or low (0)" (Column 5, lines 30-31).

Receiving a second datagram (D2) for transmission at a second priority (1), higher than the first priority (0), before the transmission of the first datagram is completed. A "low priority packet D1 has been started and then a high priority packet D2 interrupts it" (Column 5, lines 11-12).

Responsive to receiving the second datagram (D2), deciding to divide the first datagram (D1) into a plurality of fragments, including a first fragment and a last fragment. "The low priority packet is fragmented and its transmission is suspended until all high priority packets have been sent" (Column 5, lines 12-14).

Transmitting the fragments of the first datagram (D1) over the channel, beginning with the first fragment. Refer to Figure 3, where the first fragment of D1 is transmitted.

Transmitting at least a fragment of the second datagram (D2) over the channel before transmitting the last fragment of the first datagram (D1). Refer to Figure 3, where D2 is transmitted before the second fragment of D1. "When the high priority transmit buffer is emptied, the low priority packet is restarted and the remainder of the low priority packet is sent" (Column 4, lines 60-62).

Referring to claim 16, Ellis et al disclose in Figure 3 a method for transmitting data over a channel. Refer to the rejection of claim 1. Ellis et al also disclose in Figure 2 a receiver (Element 36), adapted to receive the fragments of the datagrams over the channel from a transmitter (Element 24) and to reassemble the fragments so as to reconstruct the first and second datagrams. Refer to Column 4, line 66 to Column 5, line 7.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,497,371 to Ellis et al in view of U.S. Patent No. 6,594,278 to Baroudi.

Ellis et al do not disclose that receiving the first and second datagrams comprises receiving IP packets.

Baroudi discloses that IP is the standard of choice for network layer communication over the Internet since it provides fragmentation and reassembly of data as well as error reporting. Refer to Column 1, lines 51-58 and Column 2, lines 28-34. IP packets also provide "tremendous flexibility for a system to fragment data and send the packets in an order that maximizes efficiency" (Column 2, lines 35-37). A small packet may encounter a large delay while waiting for a large packet to be transmitted over the network. Fragmentation allows a portion of the large packet to be transmitted, then the small packet, and then the rest of the large packet. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that receiving the first and second datagrams comprises receiving IP packets; the motivation being that IP packets allow for fragmentation and reassembly of packets, and safeguards to prevent errors, thereby maximizing the system efficiency.

5. Claims 3-7 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,497,371 to Ellis et al in view of U.S. Patent No. 5,742,592 to Scholefield et al.

Referring to claims 3 and 18, Ellis et al do not disclose that transmitting the fragments comprises distributing the fragments for transmission over a plurality of parallel physical links.

Scholefield et al discloses in Figure 4 that transmitting the fragments comprises

distributing the fragments for transmission over a plurality of parallel physical links (subchannels - uplink burst groups or downlink burst groups). "Upon receiving the allocations of a number of  $n$  designated subchannels, the subscriber then fragments the data packet into  $n$  data units and communicates each data unit via a respective one of the  $n$  designated subchannels" (Column 4 lines 43-46). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that transmitting the fragments comprises distributing the fragments for transmission over a plurality of parallel physical links; the motivation being that this allows first portions of data to be initially transmitted on their respective subchannels and if a higher priority packet needs to be transmitted, the system defers transmission of the initial data and allocates the subchannels to the higher priority packets. Refer to Column 5, lines 47-58.

Referring to claims 4 and 19, Ellis et al do not disclose that the plurality of parallel physical links are arranged so as to constitute a single logical channel.

Scholefield et al disclose in Figure 4 that the plurality of parallel physical links (subchannels) are arranged so as to constitute a single logical channel (GPRS multiframe). Refer to Column 4, lines 55-65. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the plurality of parallel physical links are arranged so as to constitute a single logical channel; the motivation being that a single logical channel allows multiple users to transmit data on their allocated subchannel/time slot. Refer to Column 1, lines 37-43.

Referring to claim 5, Ellis et al disclose in Figure 2 that the method comprises receiving the fragments of the first (D1) and second (D2) datagrams at a receiver (Element 36) connected to the plurality of parallel physical links, and reassembling the datagrams from the fragments at the receiver. Refer to Column 4, line 66 to Column 5, line 7.

Referring to claims 6 and 20, Ellis et al disclose that transmitting the fragment comprises adding an indication (Figure 4, Field C) to the fragments that transmission of the fragments of the first datagram (D1) was interrupted by transmission of the second datagram (D2), and wherein reassembling the datagrams comprises reassembling the packets responsive to the indication (Figure 4, Field C). "The one-bit field (C) added at the end of the payload indicates whether the packet is complete (1) or will be continued (0) in the subsequent packet" (Column 5, lines 32-35). Refer to Figure 3 where the C field of the first datagram (D1) is set to 0, indicating that it has been interrupted and is incomplete, which is used by the receiver (Figure 2, Element 36) to reassemble the datagrams. Refer to Column 4, line 66 to Column 5, line 7 and Column 6, lines 36-38 and lines 60-67.

Referring to claims 7 and 21, Ellis et al discloses in that reassembling the datagrams comprises detecting loss of a fragment of one of the datagrams on one of the links, and discarding other fragments received at the receiver (Figure 2, Element 36) responsive to the indication (Figure 4, SEQ field). The protocol check 74 at receiver 36 detects all repeated or skipped fragments using the sequence number field. "Whenever a packet is repeated or skipped as indicated in SEQ, all low priority packets or packet

fragments following the high priority packet will be discarded" (Column 5, lines 55-58).

Refer to Column 7, lines 11-27.

6. Claims 8-12 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,497,371 to Ellis et al in view of U.S. Publication No. 2002/0041595 to Delvaux.

Referring to claims 8 and 22, Ellis et al do not disclose that transmitting the fragment of the second datagram comprises dividing the second datagram into multiple fragments for transmission over the channel.

Delvaux discloses in Figure 4A that transmitting the fragment of the second datagram (Frame 200) comprises dividing the second datagram (Frame 200) into multiple fragments for transmission over the channel. Frame 100 is fragmented into multiple fragments due to the interruption of higher priority frame 200. Frame 200 is fragmented into multiple fragments due to the interruption of higher priority frame 400. Refer to Paragraph 0011-0012. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that transmitting the fragment of the second datagram comprises dividing the second datagram into multiple fragments for transmission over the channel; the motivation being that the second datagram may need to be preempted by another datagram of higher priority than itself, thereby allowing the highest priority datagram to be transmitted before all lower priority frames.

Referring to claims 9 and 23, Ellis et al do not disclose that transmitting at least the fragment of the second datagram comprises interrupting transmission of the



fragments of the first datagram until all fragments of the second datagram have been transmitted over the channel.

Delvaux discloses in Figure 4A that transmitting at least the fragment of the second datagram (Frame 200) comprises interrupting transmission of the fragments (Fragments 100a and 100b) of the first datagram (Frame 100) until all fragments (Fragments 200a and 200b) of the second datagram (Frame 200) have been transmitted over the channel. The two fragments (200a and 200b) of frame 200 are transmitted before the last fragment (100a) of frame 100, since frame 200 is of higher priority than frame 100. Refer to Paragraph 0011-0012. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that transmitting at least the fragment of the second datagram comprises interrupting transmission of the fragments of the first datagram until all fragments of the second datagram have been transmitted over the channel; the motivation being that the entire higher priority frame should be transmitted before the lower priority frame is completed, thereby ensuring that the higher priority information is transmitted first.

Referring to claims 10 and 24, Ellis et al do not disclose that transmitting at least the fragment of the second datagram comprises interspersing transmission of the fragments of the first datagram with one or more fragments of the second datagram, subject to the first and second priorities.

Delvaux discloses in Figure 4A that transmitting at least the fragment of the second datagram (Frame 200) comprises interspersing transmission of the fragments of the first datagram (Frame 100) with one fragment of the second datagram (Frame 200),

subject to the first and second priorities. The first fragment 100a of the frame 100 is transmitted before the first fragment 200a of frame 200 and the last fragment 100b of the frame 100 is transmitted after the last fragment 200a of frame 200. Refer to Paragraph 0011-0012. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that transmitting at least the fragment of the second datagram comprises interspersing transmission of the fragments of the first datagram with one or more fragments of the second datagram; the motivation being that this allows a first fragment of a higher priority to interrupt the transmission of a lower priority frame and a last fragment of the higher priority frame to complete its transmission before the lower priority frame ends.

Referring to claims 11 and 25, Ellis et al do not disclose that the multiple fragments of the second datagram comprise first and last fragments; the method comprising: receiving a third datagram for transmission at a third priority, higher than the second priority, before the last fragment of the second datagram has been transmitted; and transmitting at least a fragment of the third datagram over the channel before transmitting the last fragment of the second datagram.

Delvaux discloses in Figure 4a that the multiple fragments of the second datagram (Frame 200) comprise first (Fragment 200a) and last (Fragment 200b) fragments; the method comprising: receiving a third datagram (Frame 400) for transmission at a third priority, higher than the second priority, before the last fragment (Fragment 200b) of the second datagram (Frame 200) has been transmitted; and transmitting at least a fragment of the third datagram (Frame 400) over the channel

before transmitting the last fragment (Fragment 200b) of the second datagram (Frame 200). Refer to Paragraph 0011-0012. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to include a third datagram for transmission at the third priority, the motivation being that this allows a highest priority frame to preempt all lower priority frames.

Referring to claims 12 and 26, Ellis et al do not disclose that transmitting at least one fragment of the third datagram comprises transmitting at least one fragment of the third datagram before transmitting at least fragment of the first datagram.

Delvaux discloses in Figure 4A that transmitting at least one fragment of the third datagram (Frame 400) comprises transmitting at least one fragment of the third datagram (Frame 400) before transmitting the last fragment (Fragment 100b) of the first datagram (Frame 100). Refer to Paragraph 0011-0012. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that transmitting at least one fragment of the third datagram comprises transmitting at least one fragment of the third datagram before transmitting at least fragment of the first datagram; the motivation being that this allows the highest priority frame to complete its transmission before all other lower priority frames.

***Allowable Subject Matter***

7. Claims 13-15 and 27-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Ng whose telephone number is (703) 305-8395. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nguyen Chau can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C. Ng *~*  
May 6, 2004



CHAU NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600